Trends in Labour Productivity in Alberta

June 2013

Alberta

Canada

Introduction

Labour productivity is the single most important determinant in maintaining and enhancing sustained prosperity[1]. Higher productivity growth would alleviate most of Alberta's labour shortage problems and secure long-term economic growth. The key drivers of labour productivity include skills and human capital, capital investment, and innovation.

Labour productivity is measured by GDP (Gross Domestic Product) per hour worked. In this report, Alberta's performance in labour productivity will be analyzed both relative to other provinces and by industry. Labour productivity is affected both by the quality of the human capital (education, training, skills and experience of the labour force) and the amount and sophistication of the equipment, tools and machinery being used by the workers. Investment in people and equipment are therefore foundational to productivity growth. However, how innovatively people apply their knowledge and skills to improve and expand the quantity, quality, and types of goods and services produced for a given level of effort is also crucial to productivity growth. A culture of innovation is, therefore, also a key element of the productivity equation.

In May 2013, Statistics Canada released revised productivity estimates for the years 2007 to 2012 (no estimates for the years prior to 2007 have been released as yet). Besides a number of methodological changes Statistics Canada also changed the base year to 2007. In previous releases all productivity estimates used a 2002 base year. This means that all constant dollar GDP estimates and therefore also all productivity estimates are now expressed at price levels that prevailed in 2007, rather than in 2002. The change of the base year from 2002 to 2007 has a large impact on the productivity estimates as price levels were considerably higher in 2007 than in 2002, e.g. in May 2012's release the labour productivity level for Alberta's business sector was estimated at $46 per hour for 2011, compared with the revised estimate of $68 per hour that was released in May 2013.

Recent Productivity Trends

According to Statistics Canada's latest productivity database, Alberta has the highest labour productivity in the country. In 2012, labour productivity in Alberta's business sector was $68.50 per hour (Chart 1), 44% higher than the Canadian average of $47.70 per hour.

Whereas according to last year's database Alberta also led the nation between 2009 and 2011, the new database has Newfoundland and Labrador in the lead for all five years prior to 2012, followed by Alberta. Statistics Canada's rebasing from 2002 to 2007 had an even larger impact on Newfoundland's productivity levels than on Alberta's.

[1] Alberta Competitiveness Council – Moving Alberta Forward, page 20

Chart 1

Business Sector Productivity of Labour - 2012

(Real GDP per Hour Worked, in 2007 constant dollars)

Source: Statistics Canada -- GDP at basic prices

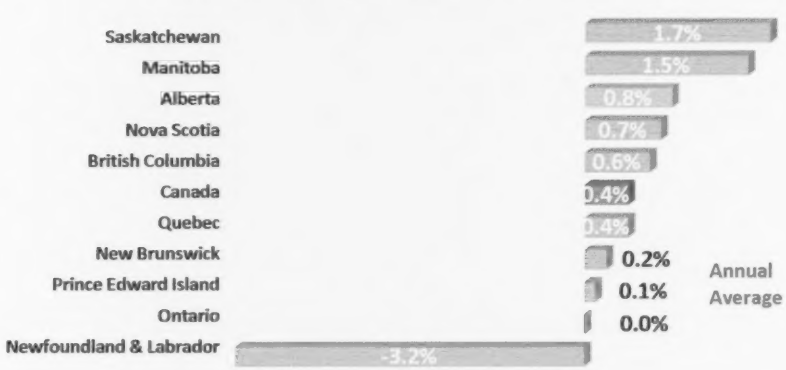
Over the past five years, GDP in Alberta's business sector[2] has increased by 9.3% or 1.8% per year. Over the same period, the total number of hours worked increased by 4.9% or 1.0% per year. As a result, labour productivity rose only 4.3% over the 5-year time period or 0.8% per year. In other words, about 45% of the increase in GDP came as a result of increased labour productivity and 55% was the result of increased labour input

Alberta's 0.8% average annual growth rate in labour productivity was the third highest provincial growth rate over the past five years (Chart 2) behind Saskatchewan and Manitoba, and was double the Canadian growth rate of 0.4% per year.

Chart 2

Business Sector Labour Productivity Growth Rates

2007-2012 (Based on Hours Worked)



Source: Statistics Canada -- GDP at basic prices

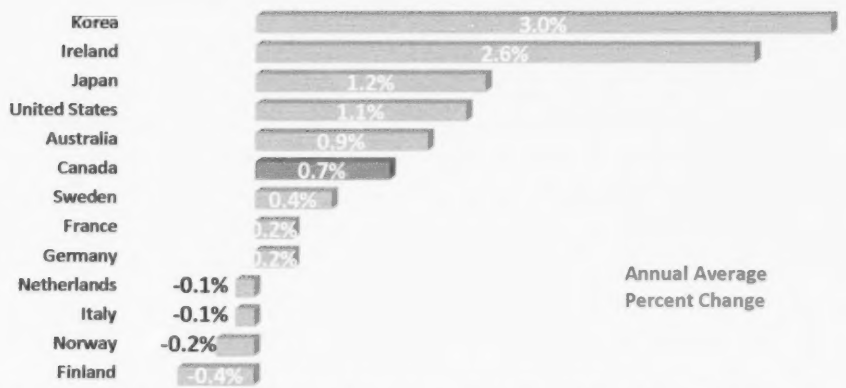
[2] Excludes non-commercial sectors, such as public administration, healthcare and education

However, Alberta's productivity growth rate is lower than the 1.1% U.S. growth rate over the same period and that of a number of other international competitors (Chart 3[3]). Average annual productivity growth rates are generally lower over the more recent 5-year period than over longer time periods because of the recent global recession.

Chart 3

International Labour Productivity Growth Rates

2007-2012 (Based on Hours Worked)



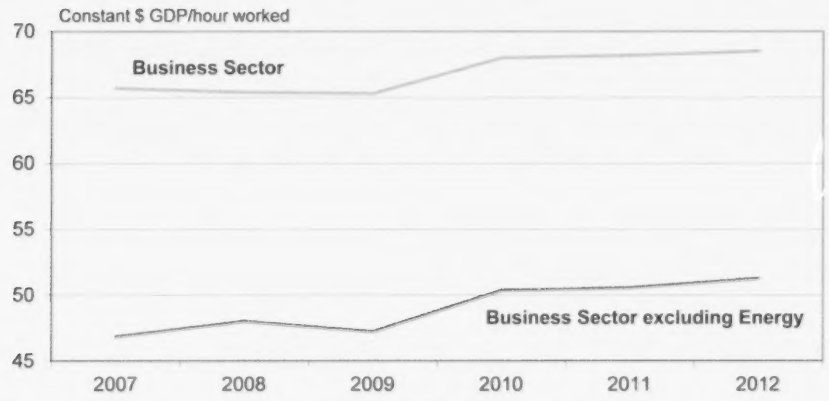
Source: The Conference Board and Groningen Growth and Development Centre

Almost all of Alberta's recent productivity gains occurred in 2010 (see Chart 4). Prior to 2010 productivity growth was elusive as a result of the global recession. When the economy turned around in 2010 companies did not feel confident enough about the rebound to hire additional workers and productivity grew strongly as a result that year. Productivity growth was rather subdued in both 2011 and 2012 as companies started to hire again.

[3] Productivity growth rates in the international comparison (Chart 3) are based on the total economy rather than the business sector and therefore Canada's growth rate in Chart 3 is not directly comparable to the one in Chart 2

Chart 4

Productivity Levels in Alberta
Business Sector and Business Sector excluding Energy

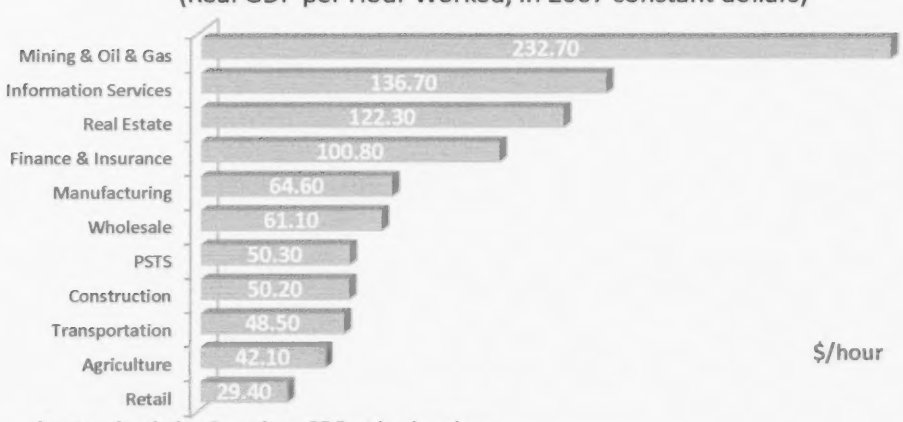


Sources: Statistics Canada and Alberta Enterprise & Advanced Education

Both Alberta's high productivity level and its less than robust productivity growth rate are in large part the result of its large and capital-intensive oil and gas extraction sector. In 2012, the labour productivity level was $233 per hour in the mining and oil and gas sector (Chart 5), because of very high levels in the oil and gas extraction industry ($425 per hour). When excluding the mining and oil and gas sector Alberta's labour productivity level drops to $51.30 per hour, only slightly ahead of the Canadian average of $47.70. It is also much lower than the overall business sector productivity level of $68.50 in Alberta.

Chart 5

Labour Productivity in Alberta Industries in 2012
(Real GDP per Hour Worked, in 2007 constant dollars)



Source: Statistics Canada -- GDP at basic prices
PSTS: Professional, Scientific and Technical Services

Although the mining and oil and gas sector has the highest productivity level, it has declined sharply over the past 15 to 20 years, for instance productivity declined from $320 per hour in 2007 to $233 in 2012. There are a number of reasons for this decline. First, Alberta's conventional oil and gas resources are in decline and it takes more effort (more drilling and/or more secondary and tertiary extraction technologies, such as water flooding or hydraulic fracturing) to find and extract each additional barrel or gigajoule. Second, the switch to oil sands has also reduced the overall productivity level for the oil and gas extraction sector as oil sands require more labour than conventional reserves. Third, new oil sands projects will have employees on-site before production actually starts (this is raising hours worked without any increase in GDP). Fourth, high oil prices have made high cost oil reservoirs more attractive.

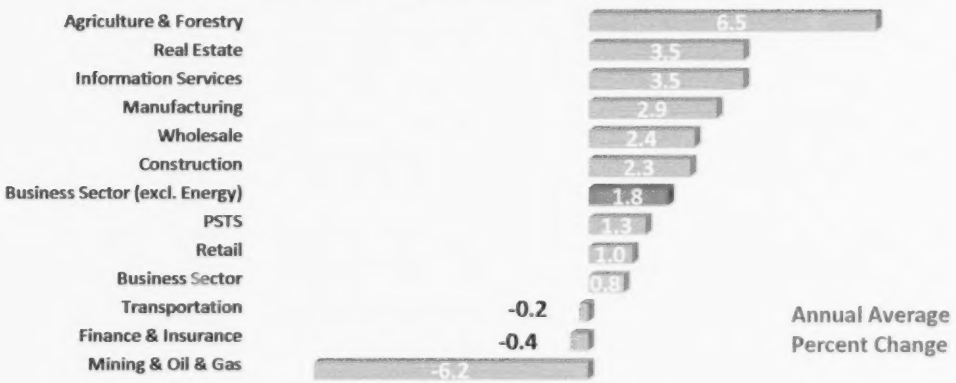
When excluding the mining and energy sector from the business sector, Alberta's labour productivity performance is much better with productivity rising by 1.8% per year between 2007 and 2012 (Chart 6). This growth rate far exceeds the Canadian average of 0.7% per year (after excluding the mining and oil and gas sector), and compares favourably with the growth rates in most developed economies.

Most other sectors had strong productivity growth. Farm consolidation and capital investment led to the highest productivity growth in the agricultural sector with a rate of 6.5% per year. Information services (mainly telecommunication services) benefited from heavy investment in telecom equipment, especially by cell phone companies, and had productivity growth of 3.5% per year. Productivity growth of 3.5% per year in the real estate sector was the result of a large decline in the number of jobs in the rental and leasing sub-sector.

Chart 6

Labour Productivity Growth Rates in Alberta's Industries

2007 - 2012 (Based on Hours)

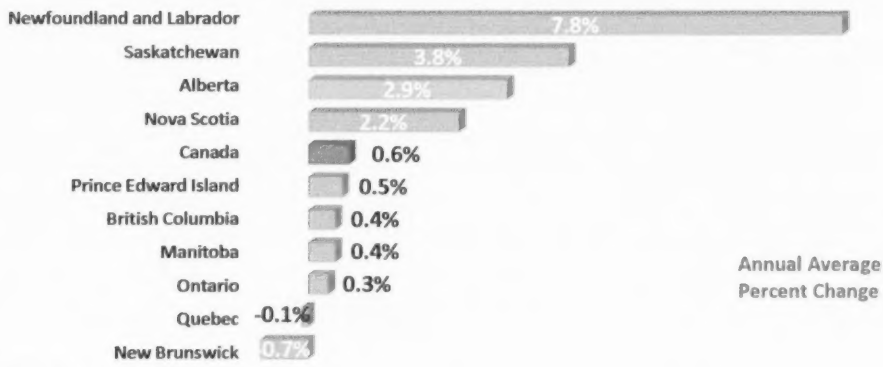


Source: Statistics Canada and Alberta Enterprise & Advanced Education
PSTS = Professional, Scientific and Technical Services

Alberta's manufacturing sector also had the highest productivity level of all provinces. This sector had relatively strong productivity growth of 2.9% per year, a rate that was actually higher than the 1.8% average annual growth in the U.S. manufacturing sector over the same period and Canada's 0.6% growth rate. Only Newfoundland and Saskatchewan performed better than Alberta for growth in manufacturing productivity (Chart 7).

Chart 7

Provincial Labour Productivity Growth Rates - Manufacturing
2007-2012 (Based on Hours Worked)

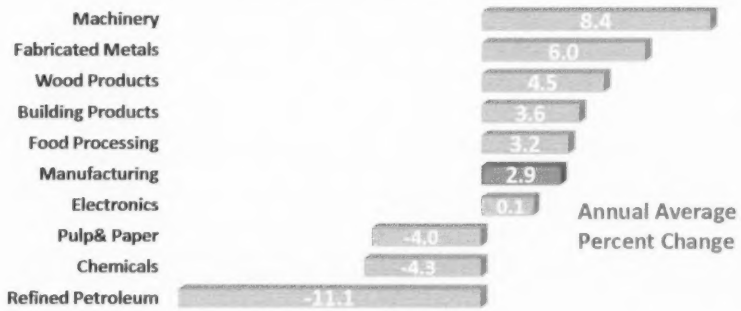


Source: Statistics Canada

High growth was registered in the globally competitive machinery (8.4% per year), fabricated metals (6.0%) and wood products (5.4%) industries (Chart 8). Refineries and chemicals had declining productivity, as high prices may have sheltered these industries. Alberta's pulp and paper industry also had declining productivity, a trend that was observed in other provinces as well, and may have resulted from Canada's rapidly declining competitiveness in this sector which resulted in output declining even more rapidly over the past five years than employment.

Chart 8

Labour Productivity Growth Rates in Manufacturing Sectors
2007 - 2012 (Based on Hours)

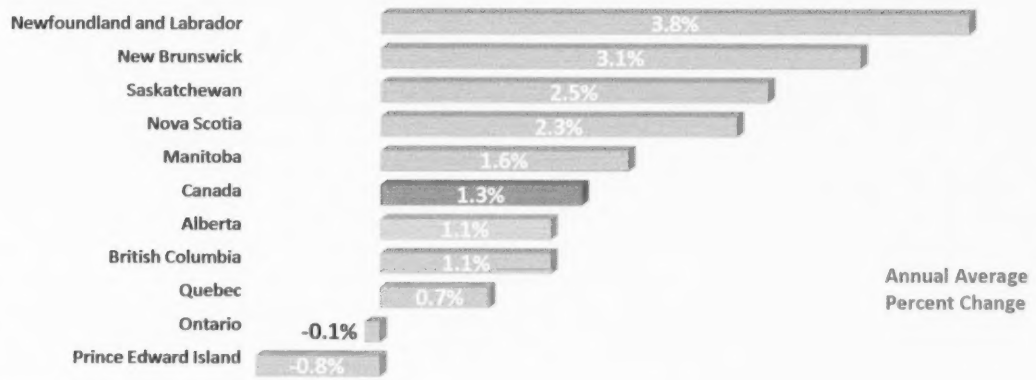


Source: Statistics Canada

Productivity in the business services sector[4] (excluding retail and wholesale trade and real estate) has grown at an average annual rate of 1.1% per year (Chart 9), just below the Canadian average growth of 1.3% per year. The following business service industries had the highest growth: information services (3.5% per year); accommodation and food services (3.2%); arts, entertainment and recreation (3.0%); professional, scientific and technical services (1.3%).

Chart 9

Provincial Labour Productivity Growth Rates - Business Services 2007-2012 (Based on Hours Worked)



Source: Statistics Canada -- GDP at basic prices

In summary, after a five-year hiatus Alberta overtook Newfoundland in 2012 as the province with the highest labour productivity level. Although weak historically, Alberta's 0.8% average annual productivity growth between 2007 and 2012 compares favourably to rates achieved in the other provinces and Canada. Moreover, if we exclude its largest sector, mining and oil and gas, which has had a long period of declining productivity, Alberta's growth rate of 1.8% per year looks quite strong.

[4] Business Services include the following industries: Transportation & Warehousing; Information & Culture; Finance & Insurance; Professional, Scientific & Technical Services; Administrative & Support, Waste Management; Arts, Entertainment & Recreation; Accommodation & Food Services. Excluded: Retail; Wholesale; Real Estate